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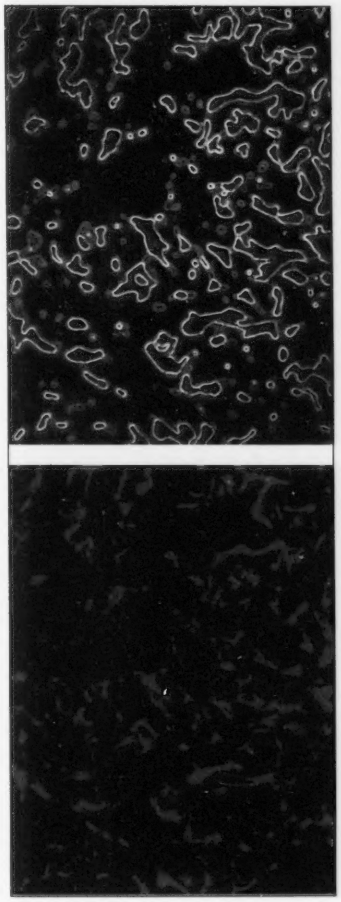

ON THE COVER
DeBusk et al. find that δ-catenin expression in vascular endothelial cells is boosted by inflammatory cytokines, and that δ-catenin deficiency impairs tumor angiogenesis in mice. The original immunofluorescence image (bottom) shows the endothelial marker CD31 (green) in tumor tissue sections from mice injected subcutaneously with Lewis lung carcinoma cells. Artwork (top) by Joshua Graver (joshuagraver@mac.com).
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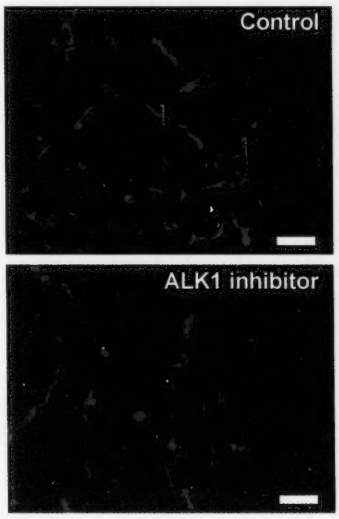

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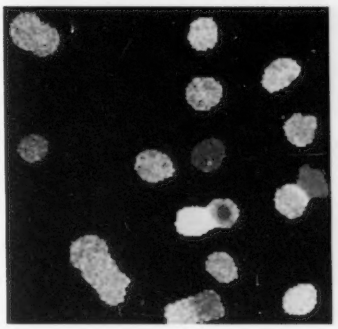

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ON THE COVER
Groups led by Vinuesa and Tarlinton find that IL-21 released from follicular T helper cells acts directly via the IL-21 receptor on B cells to boost germinal center B cell proliferation and differentiation. The original photomicrograph by Chang Pheh-Ping and Michelle Linterman shows the spleen of a wild-type mouse immunized 8 d earlier with sheep red blood cells; anti-IgD (orange) marks recirculating follicular B cells and peanut agglutinin (blue) stains germinal center B cells. Artwork by Joshua Graver (joshuagraver@mac.com).
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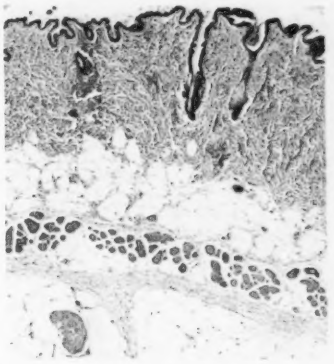

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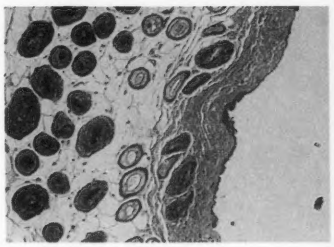

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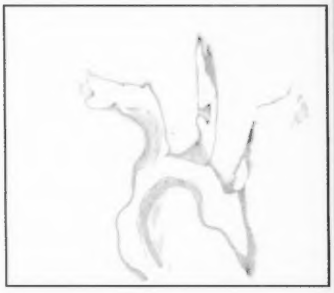

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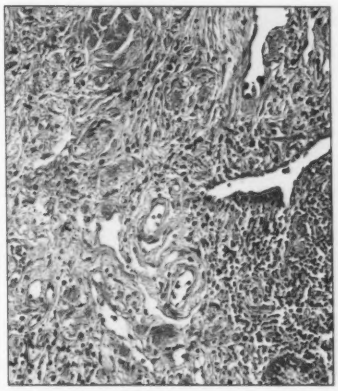

ON THE COVER
Wilson et al. describe a critical role for interleukin-17A (IL-17A) in lung fibrosis in mice, and document elevated IL-17A concentrations in the bronchoalveolar lavage of humans with idiopathic pulmonary fibrosis. The original image by Mark Wilson and Bernadette Gochuico shows collagen (blue), cytoplasm (pink), and nuclei (dark red) in a Masson's trichrome-stained lung section from a human with idiopathic pulmonary fibrosis.
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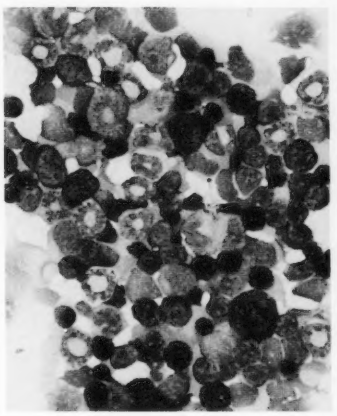

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ON THE COVER
As shown by Cohen et al. and Fletcher et al., different populations of lymph node stromal cells display different subsets of self-antigens. If each stromal cell population with its characteristic self-antigen profile is represented as a different color, a lymph node and its distinct zones might look like a tile mosaic to cells passing through. Watercolor artwork by Emilie Clark (emilie@emilieclark.com).
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763 **Anti-phospholipid human monoclonal antibodies inhibit CCR5-tropic HIV-1 and induce β-chemokines**
M. Anthony Moody, Hua-Xin Liao, S. Munir Alam, Richard M. Scearce, M. Kelly Plonk, Daniel M. Kozink, Mark S. Drinker, Ruijun Zhang, Shi-Mao Xia, Laura L. Sutherland, Georgia D. Tomaras, Ian P. Giles, John C. Kappes, Christina Ochsenbauer-Jambor, Tara G. Edmonds, Melina Soares, Gustavo Barbero, Donald N. Forthal, Gary Landucci, Connie Chang, Steven W. King, Anita Kavlie, Thomas N. Denny, Kwan-Ki Hwang, Pojen P. Chen, Philip E. Thorpe, David C. Montefiori, and Barton F. Haynes

777 **The adaptor molecule CARD9 is essential for tuberculosis control**
Anca Dorhoi, Christiane Desel, Vladimir Yeremeev, Lydia Pradl, Volker Brinkmann, Hans-Joachim Mollenkopf, Karin Hanke, Olaf Gross, Jürgen Ruland, and Stefan H.E. Kaufmann

793 **Antagonism of the complement component C4 by flavivirus nonstructural protein NS1**
Panisadee Avirutnan, Anja Fuchs, Richard E. Hauhart, Pawit Somnuke, Soonjeon Youn, Michael S. Diamond, and John P. Atkinson

807 **Human cytomegalovirus elicits fetal γδ T cell responses in utero**
David Vermijlen, Margreet Brouwer, Catherine Donner, Corinne Liesnard, Marie Tackoen, Michel Van Rysselberge, Nicolas Twité, Michel Goldman, Arnaud Marchant, and Fabienne Willems

823 **Peripheral CD103$^+$ dendritic cells form a unified subset developmentally related to CD8α$^+$ conventional dendritic cells**
Brian T. Edelson, Wumesh KC, Richard Juang, Masako Kohyama, Loralyn A. Benoit, Paul A. Klekotka, Clara Moon, Jörn C. Albring, Wataru Ise, Drew G. Michael, Deepta Bhattacharya, Thaddeus S. Stappenbeck, Michael J. Holtzman, Sun-Sang J. Sung, Theresa L. Murphy, Kai Hildner, and Kenneth M. Murphy

837 **A novel Rac-dependent checkpoint in B cell development controls entry into the splenic white pulp and cell survival**
Robert B. Henderson, Katarzyna Grys, Anne Vehlow, Carine de Bettignies, Agnieszka Zachacz, Tom Henley, Martin Turner, Facundo Batista, and Victor L.J. Tybulewicz

855 **53BP1 regulates DNA resection and the choice between classical and alternative end joining during class switch recombination**
Anne Bothmer, Davide F. Robbiani, Niklas Feldhahn, Anna Gazumyan, Andre Nussenzweig, and Michel C. Nussenzweig

867 **Survival effect of PDGF-CC rescues neurons from apoptosis in both brain and retina by regulating GSK3β phosphorylation**
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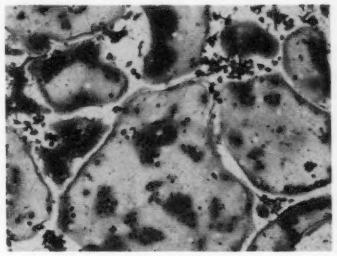
881 **Cerebral cavernous malformations proteins inhibit Rho kinase to stabilize vascular integrity**
Rebecca A. Stockton, Robert Shenkar, Issam A. Awad, and Mark H. Ginsberg



Blimp1–Bcl6 axis influences bone mass.
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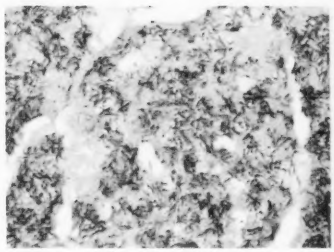

CARD9 in control of mycobacterial infection.
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897 *Mycobacterium tuberculosis* infection induces il12rb1 splicing to generate a novel *IL-12Rβ1* isoform that enhances DC migration
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899 c-Rel is required for the development of thymic Foxp3$^+$ CD4 regulatory T cells
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901 Cross-linking the B7 family molecule B7-DC directly activates immune functions of dendritic cells
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RhoA-ROCK in vascular barrier function.
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907 Affinity measured by microcluster
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911 Peripheral T cell lymphoma: new model + new insight
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915 Activating and inhibitory functions for the histone lysine methyltransferase G9a in T helper cell differentiation and function
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923 Calcineurin regulates innate antifungal immunity in neutrophils
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933 Batf coordinates multiple aspects of B and T cell function required for normal antibody responses
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943 Invariant NKT cells limit activation of autoreactive CD1d-positive B cells
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963 Biphasic Aire expression in early embryos and in medullary thymic epithelial cells before end-stage terminal differentiation
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973 Class switching and meiotic defects in mice lacking the E3 ubiquitin ligase RNF8
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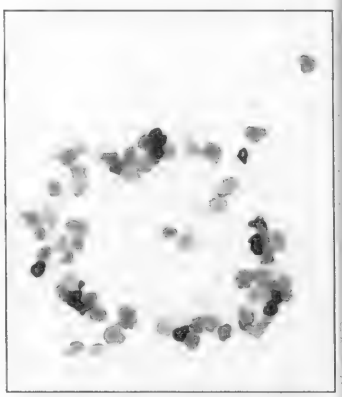

ON THE COVER
As shown by Liu et al., B cell receptor (BCR) affinity for antigen is "translated" into alterations in BCR mobility and clustering very early after antigen encounter. Pseudocolored spots represent individual BCRs tracked by total internal reflection fluorescence microscopy. Artwork by Rachel Urkowitz (rachelurk@earthlink.net).
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983 **Rnf8 deficiency impairs class switch recombination, spermatogenesis, and genomic integrity and predisposes for cancer**
Li Li, Marie-Jo Halaby, Anne Hakem, Renato Cardoso, Samah El Ghamrasni, Shane Harding, Norman Chan, Robert Bristow, Otto Sanchez, Daniel Durocher, and Razqallah Hakem

999 **Regulation of medullary thymic epithelial cell differentiation and function by the signaling protein Sin**
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1015 **Co-receptor choice by Vα14*i* NKT cells is driven by Th-POK expression rather than avoidance of CD8-mediated negative selection**
Isaac Engel, Kirsten Hammond, Barbara A. Sullivan, Xi He, Ichiro Taniuchi, Dietmar Kappes, and Mitchell Kronenberg

1031 **The fusion kinase ITK-SYK mimics a T cell receptor signal and drives oncogenesis in conditional mouse models of peripheral T cell lymphoma**
Konstanze Pechloff, Julian Holch, Uta Ferch, Marc Schweneker, Kristina Brunner, Markus Kremer, Tim Sparwasser, Leticia Quintanilla-Martinez, Ursula Zimber-Strobl, Berthold Streubel, Andreas Gewies, Christian Peschel, and Jürgen Ruland
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1045 **The NLRP3 inflammasome functions as a negative regulator of tumorigenesis during colitis-associated cancer**
Irving C. Allen, Erin McElvania TeKippe, Rita-Marie T. Woodford, Joshua M. Uronis, Eda K. Holl, Arlin B. Rogers, Hans H. Herfarth, Christian Jobin, and Jenny P.-Y. Ting

1057 **TNF suppresses acute intestinal inflammation by inducing local glucocorticoid synthesis**
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1067 **Regulation of learning and memory by meningeal immunity: a key role for IL-4**
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1081 **Inhibition of T cell response to native low-density lipoprotein reduces atherosclerosis**
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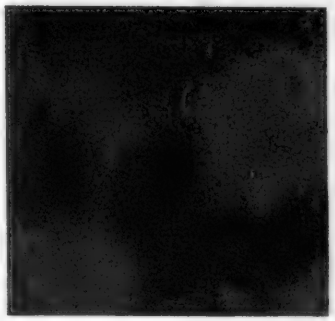
1095 **Antigen affinity discrimination is an intrinsic function of the B cell receptor**
Wanli Liu, Tobias Meckel, Pavel Tolar, Hae Won Sohn, and Susan K. Pierce
See Commentary on page 907

1113 **S1P1 receptor directs the release of immature B cells from bone marrow into blood**
Maria L. Allende, Galina Tuymetova, Bridgin G. Lee, Eliana Bonifacino, Yun-Ping Wu, and Richard L. Proia



iNKT cells inhibit autoreactive B cells.
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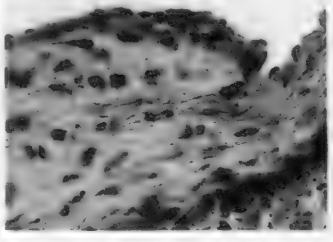

T cell response to native LDL.
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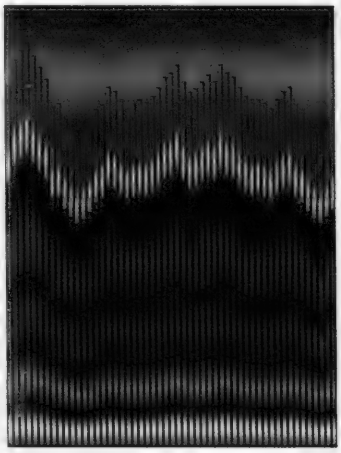

ON THE COVER
As shown by Morita et al. and discussed by Hock, different hematopoietic stem cells (HSCs) exhibit different propensities to give rise to individual hematopoietic lineages. Each column represents the complete spectrum of hematopoietic reconstitution induced by an individual HSC, with each color representing a distinct lineage. Artwork by Joshua Graver (joshuagraver@mac.com).
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Minireviews

1127 **Some hematopoietic stem cells are more equal than others**
Hanno Hock

1131 **Found in translation: the human equivalent of mouse CD8$^+$ dendritic cells**
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1135 **Complement drives Th17 cell differentiation and triggers autoimmune arthritis**
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1145 **Activating WASP mutations associated with X-linked neutropenia result in enhanced actin polymerization, altered cytoskeletal responses, and genomic instability in lymphocytes**
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1153 **The route of priming influences the ability of respiratory virus–specific memory CD8$^+$ T cells to be activated by residual antigen**
Shiki Takamura, Alan D. Roberts, Dawn M. Jelley-Gibbs, Susan T. Wittmer, Jacob E. Kohlmeier, and David L. Woodland

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1161 **Antigen persistence and the control of local T cell memory by migrant respiratory dendritic cells after acute virus infection**
Taeg S. Kim, Matthew M. Hufford, Jie Sun, Yang-Xin Fu, and Thomas J. Braciale

1173 **Heterogeneity and hierarchy within the most primitive hematopoietic stem cell compartment**
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1183 **SENP1-mediated GATA1 deSUMOylation is critical for definitive erythropoiesis**
Luyang Yu, Weidong Ji, Haifeng Zhang, Matthew J. Renda, Yun He, Sharon Lin, Ee-chun Cheng, Hong Chen, Diane S. Krause, and Wang Min

1197 **Tob1 is a constitutively expressed repressor of liver regeneration**
Karen J. Ho, Nhue L. Do, Hasan H. Otu, Martin J. Dib, Xianghui Ren, Keiichi Enjyoji, Simon C. Robson, Ernest F. Terwilliger, and Seth J. Karp

1209 **BCL6 is critical for the development of a diverse primary B cell repertoire**
Cihangir Duy, J. Jessica Yu, Rahul Nahar, Srividya Swaminathan, Soo-Mi Kweon, Jose M. Polo, Ester Valls, Lars Klemm, Seyedmehdi Shojaee, Leandro Cerchietti, Wolfgang Schuh, Hans-Martin Jäck, Christian Hurtz, Parham Ramezani-Rad, Sebastian Herzog, Hassan Jumaa, H. Phillip Koeffler, Ignacio Moreno de Alborán, Ari M. Melnick, B. Hilda Ye, and Markus Müschen

1223 **Peptide-MHC heterodimers show that thymic positive selection requires a more restricted set of self-peptides than negative selection**
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1235 **One naive T cell, multiple fates in CD8$^+$ T cell differentiation**
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1247 **Human CD141$^+$ (BDCA-3)$^+$ dendritic cells (DCs) represent a unique myeloid DC subset that cross-presents necrotic cell antigens**
Sarah L. Jongbloed, Andrew J. Kassianos, Kylie J. McDonald, Georgina J. Clark, Xinsheng Ju, Catherine E. Angel, Chun-Jen J. Chen, P. Rod Dunbar, Robert B. Wadley, Varinder Jeet, Annelie J.E. Vulink, Derek N.J. Hart, and Kristen J. Radford
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1261 **Characterization of human DNGR-1$^+$ BDCA3$^+$ leukocytes as putative equivalents of mouse CD8α^+ dendritic cells**
Lionel Franz Poulin, Mariolina Salio, Emmanuel Griessinger, Fernando Anjos-Afonso, Ligia Craciun, Ji-Li Chen, Anna M. Keller, Olivier Joffre, Santiago Zelenay, Emma Nye, Alain Le Moine, Florence Faure, Vincent Donckier, David Sancho, Vincenzo Cerundolo, Dominique Bonnet, and Caetano Reis e Sousa
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1273 **Superior antigen cross-presentation and XCR1 expression define human CD11c$^+$CD141$^+$ cells as homologues of mouse CD8$^+$ dendritic cells**
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1283 **The XC chemokine receptor 1 is a conserved selective marker of mammalian cells homologous to mouse CD8α^+ dendritic cells**
Karine Crozat, Rachel Guiton, Vanessa Contreras, Vincent Feuillet, Charles-Antoine Dutertre, Erwan Ventre, Thien-Phong Vu Manh, Thomas Baranek, Anne K. Storset, Jacqueline Marvel, Pierre Boudinot, Anne Hosmalin, Isabelle Schwartz-Cornil, and Marc Dalod
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1293 **Pathological versus protective functions of IL-22 in airway inflammation are regulated by IL-17A**
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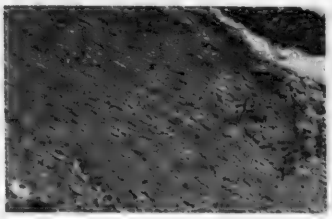
1307 **IL-10 administration reduces PGE-2 levels and promotes CR3-mediated clearance of *Escherichia coli* K1 by phagocytes in meningitis**
Rahul Mittal, Ignacio Gonzalez-Gomez, Ashok Panigrahy, Kerstin Goth, Richard Bonnet, and Nemani V. Prasadarao



Antibiotic action of IL-10
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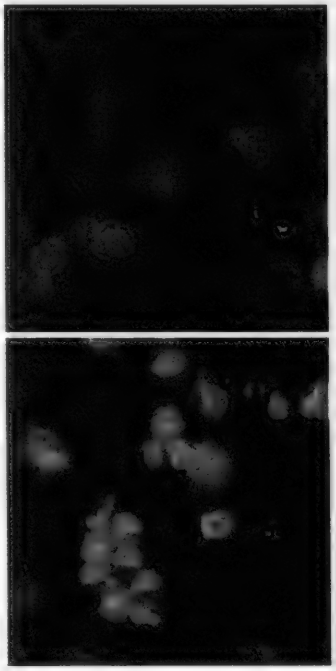

Human cross-presenting DCs.
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1321 **Microbiota innate stimulation is a prerequisite for T cell spontaneous proliferation and induction of experimental colitis**
Ting Feng, Lanfang Wang, Trenton R. Schoeb, Charles O. Elson, and Yingzi Cong

1333 **Innate immunity defines the capacity of antiviral T cells to limit persistent infection**
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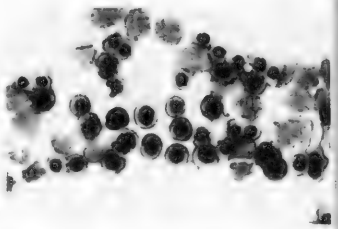

SENP1 deSUMOylates GATA1.
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ON THE COVER
As shown by Rasmussen et al., the miR-144/451 locus is needed for terminal erythropoiesis in mice. miR-144/451–deficient nucleated erythroblasts exhibit inefficient size reduction and enucleation. Watercolor image depicts a nucleated erythroblast (brown, hemoglobin; pink, nucleus). Artwork by Emilie Clark (emilie@emilieclark.com).
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Minireviews

1347 PI3 kinase signalling blocks Foxp3 expression by sequestering Foxo factors
Matthias Merkenschlager and Harald von Boehmer

Brief Definitive Reports

1351 The miR-144/451 locus is required for erythroid homeostasis
Kasper D. Rasmussen, Salvatore Simmini, Cei Abreu-Goodger, Nenad Bartonicek, Monica Di Giacomo, Daniel Bilbao-Cortes, Rastislav Horos, Marieke Von Lindern, Anton J. Enright, and Dónal O'Carroll

1359 The *Justy* mutation identifies *Gon4-like* as a gene that is essential for B lymphopoiesis
Ping Lu, Isaiah L. Hankel, Judit Knisz, Andreas Marquardt, Ming-Yi Chiang, Johannes Grosse, Rainer Constien, Thomas Meyer, Andreas Schroeder, Lutz Zeitlmann, Umaima Al-Alem, Ann D. Friedman, Eric I. Elliott, David K. Meyerholz, Thomas J. Waldschmidt, Paul B. Rothman, and John D. Colgan

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1369 ATM-deficient thymic lymphoma is associated with aberrant *tcrd* rearrangement and gene amplification
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1381 Transcription factors Foxo3a and Foxo1 couple the E3 ligase Cbl-b to the induction of Foxp3 expression in induced regulatory T cells
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1393 Identification of an immediate Foxp3$^-$ precursor to Foxp3$^+$ regulatory T cells in peripheral lymphoid organs of nonmanipulated mice
Sonja Schallenberg, Pei-Yun Tsai, Julia Riewaldt, and Karsten Kretschmer

1409 Pathogen-specific regulatory T cells delay the arrival of effector T cells in the lung during early tuberculosis
Shahin Shafiani, Glady's Tucker-Heard, Ai Kariyone, Kiyoshi Takatsu, and Kevin B. Urdahl

1421 IL-10 production differentially influences the magnitude, quality, and protective capacity of Th1 responses depending on the vaccine platform
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1435 Identification of a novel antigen-presenting cell population modulating antiinfluenza type 2 immunity
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1453 **Hepatic acute-phase proteins control innate immune responses during infection by promoting myeloid-derived suppressor cell function**
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1465 **The *Plasmodium* eukaryotic initiation factor-2α kinase IK2 controls the latency of sporozoites in the mosquito salivary glands**
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1475 **Cell-surface residence of sphingosine 1-phosphate receptor 1 on lymphocytes determines lymphocyte egress kinetics**
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1485 **Type I IFN enhances follicular B cell contribution to the T cell–independent antibody response**
Cristina L. Swanson, Timothy J. Wilson, Pamela Strauch, Marco Colonna, Roberta Pelanda, and Raul M. Torres

1501 **TIM1 is an endogenous ligand for LMIR5/CD300b: LMIR5 deficiency ameliorates mouse kidney ischemia/reperfusion injury**
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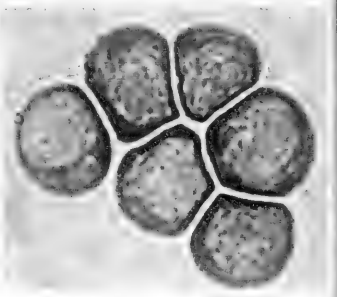
1513 **Enterocyte-specific A20 deficiency sensitizes to tumor necrosis factor–induced toxicity and experimental colitis**
Lars Vereecke, Mozes Sze, Conor Mc Guire, Brecht Rogiers, Yuanyuan Chu, Marc Schmidt-Supprian, Manolis Pasparakis, Rudi Beyaert, and Geert van Loo

1525 **Homeostatic expansion of autoreactive immunoglobulin-secreting cells in the *Rag2* mouse model of Omenn syndrome**
Barbara Cassani, Pietro Luigi Poliani, Veronica Marrella, Francesca Schena, Aisha V. Sauer, Maria Ravanini, Dario Strina, Christian E. Busse, Stephan Regenass, Hedda Wardemann, Alberto Martini, Fabio Facchetti, Mirjam van der Burg, Antonius G. Rolink, Paolo Vezzoni, Fabio Grassi, Elisabetta Traggiai, and Anna Villa

1541 **Expansion of immunoglobulin-secreting cells and defects in B cell tolerance in *Rag*-dependent immunodeficiency**
Jolan E. Walter, Francesca Rucci, Laura Patrizi, Mike Recher, Stephan Regenass, Tiziana Paganini, Marton Keszei, Itai Pessach, Philipp A. Lang, Pietro Luigi Poliani, Silvia Giliani, Waleed Al-Herz, Morton J. Cowan, Jennifer M. Puck, Jack Bleesing, Tim Niehues, Catharina Schuetz, Harry Malech, Suk See DeRavin, Fabio Facchetti, Andrew R. Gennery, Emma Andersson, Naynesh R. Kamani, JoAnn Sekiguchi, Hamid M. Alenezi, Javier Chinen, Ghassan Dbaibo, Gehad ElGhazali, Adriano Fontana, Srdjan Pasic, Cynthia Detre, Cox Terhorst, Frederick W. Alt, and Luigi D. Notarangelo



New player in antiinfluenza immunity.
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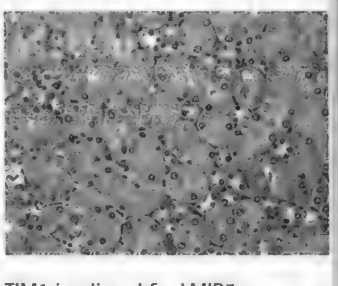

TIM1 is a ligand for LMIR5.
See page 1501

1555 **Allelic polymorphism in the T cell receptor and its impact on immune responses**
Stephanie Gras, Zhenjun Chen, John J. Miles, Yu Chih Liu, Melissa J. Bell, Lucy C. Sullivan, Lars Kjer-Nielsen, Rebekah M. Brennan, Jacqueline M. Burrows, Michelle A. Neller, Rajiv Khanna, Anthony W. Purcell, Andrew G. Brooks, James McCluskey, Jamie Rossjohn, and Scott R. Burrows

Corrections

1569 **Microbiota innate stimulation is a prerequisite for T cell spontaneous proliferation and induction of experimental colitis**
Ting Feng, Lanfang Wang, Trenton R. Schoeb, Charles O. Elson, and Yingzi Cong

Acute phase proteins boost MDSC function.
See page 1453

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Minireviews

1573 An innately dangerous balancing act: intestinal homeostasis, inflammation, and colitis-associated cancer
Mark Asquith and Fiona Powrie

Brief Definitive Reports

1579 B cell depletion reduces the development of atherosclerosis in mice
Hafid Ait-Oufella, Olivier Herbin, Jean-David Bouaziz, Christoph J. Binder, Catherine Uyttenhove, Ludivine Laurans, Soraya Taleb, Emily Van Vré, Bruno Esposito, José Vilar, Jérôme Sirvent, Jacques Van Snick, Alain Tedgui, Thomas F. Tedder, and Ziad Mallat

1589 miR-21 mediates fibrogenic activation of pulmonary fibroblasts and lung fibrosis
Gang Liu, Arnaud Friggeri, Yanping Yang, Jadranka Milosevic, Qiang Ding, Victor J. Thannickal, Naftali Kaminski, and Edward Abraham

1599 Peroxisome proliferator–activated receptor δ limits the expansion of pathogenic Th cells during central nervous system autoimmunity
Shannon E. Dunn, Roopa Bhat, Daniel S. Straus, Raymond A. Sobel, Robert Axtell, Amanda Johnson, Kim Nguyen, Lata Mukundan, Marina Moshkova, Jason C. Dugas, Ajay Chawla, and Lawrence Steinman

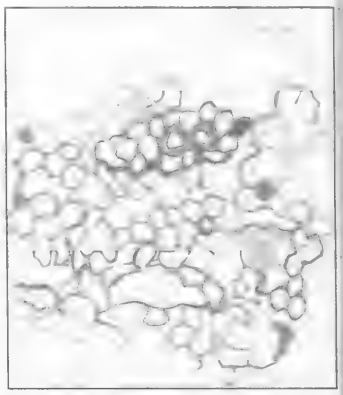
1609 Pathological role of interleukin 17 in mice subjected to repeated BCG vaccination after infection with *Mycobacterium tuberculosis*
Andrea Cruz, Alexandra G. Fraga, Jeffrey J. Fountain, Javier Rangel-Moreno, Egídio Torrado, Margarida Saraiva, Daniela R. Pereira, Troy D. Randall, Jorge Pedrosa, Andrea M. Cooper, and António G. Castro

1617 Critical role of the disintegrin metalloprotease ADAM17 for intestinal inflammation and regeneration in mice
Athena Chalaris, Nina Adam, Christian Sina, Philip Rosenstiel, Judith Lehmann-Koch, Peter Schirmacher, Dieter Hartmann, Joanna Cichy, Olga Gavrilova, Stefan Schreiber, Thomas Jostock, Vance Matthews, Robert Häsler, Christoph Becker, Markus F. Neurath, Karina Reiß, Paul Saftig, Jürgen Scheller, and Stefan Rose-John

Articles

1625 MyD88-mediated signaling prevents development of adenocarcinomas of the colon: role of interleukin 18
Rosalba Salcedo, Andrea Worschech, Marco Cardone, Yava Jones, Zsofia Gyulai, Ren-Ming Dai, Ena Wang, Winnie Ma, Diana Haines, Colm O'hUigin, Francesco M. Marincola, and Giorgio Trinchieri
See minireview on page 1573

1637 Novel mechanism for the generation of human xeno-autoantibodies against the nonhuman sialic acid *N*-glycolylneuraminic acid
Rachel E. Taylor, Christopher J. Gregg, Vered Padler-Karavani, Darius Ghaderi, Hai Yu, Shengshu Huang, Ricardo U. Sorensen, Xi Chen, Jaime Inostroza, Victor Nizet, and Ajit Varki



ON THE COVER
miRNA-21 expression increases in the lungs of patients with idiopathic pulmonary fibrosis and mice with bleomycin-induced fibrosis, according to Liu et al. Ablating miR-21 expression—even after disease onset—attenuated the severity of lung fibrosis in mice. The image depicts an abstraction of lung architecture free of fibrosis or inflammation after miR-21 ablation. Artwork by Rachel Urkowitz (rachelurk@earthlink.net).
See page 1589

1647 **Sulfatase modifying factor 1–mediated fibroblast growth factor signaling primes hematopoietic multilineage development**
Mario Buono, Ilaria Visigalli, Roberta Bergamasco, Alessandra Biffi, and Maria Pia Cosma

1661 **Elevated expression of TDP-43 in the forebrain of mice is sufficient to cause neurological and pathological phenotypes mimicking FTLD-U**
Kuen-Jer Tsai, Chun-Hung Yang, Yen-Hsin Fang, Kuan-Hung Cho, Wei-Lin Chien, Wei-Ting Wang, Tzu-Wei Wu, Ching-Po Lin, Wen-Mei Fu, and Che-Kun James Shen

1675 **FoxM1 regulates re-annealing of endothelial adherens junctions through transcriptional control of β-catenin expression**
Muhammad K. Mirza, Ying Sun, Yidan D. Zhao, Hari-Hara S.K. Potula, Randall S. Frey, Steven M. Vogel, Asrar B. Malik, and You-Yang Zhao

1687 **Antigen-specific clonal expansion and cytolytic effector function of $CD8^+$ T lymphocytes depend on the transcription factor Bcl11b**
Shuning Zhang, Mike Rozell, Raj K. Verma, Diana I. Albu, Danielle Califano, Jeffrey VanValkenburgh, Akeel Merchant, Javier Rangel-Moreno, Troy D. Randall, Nancy A. Jenkins, Neal G. Copeland, Pentao Liu, and Dorina Avram

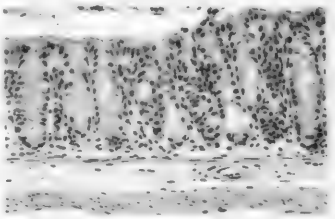
1701 **TCR ligand density and affinity determine peripheral induction of Foxp3 in vivo**
Rachel A. Gottschalk, Emily Corse, and James P. Allison

1713 **Exploitation of conserved eukaryotic host cell farnesylation machinery by an F-box effector of *Legionella pneumophila***
Christopher T.D. Price, Tasneem Al-Quadan, Marina Santic, Snake C. Jones, and Yousef Abu Kwaik

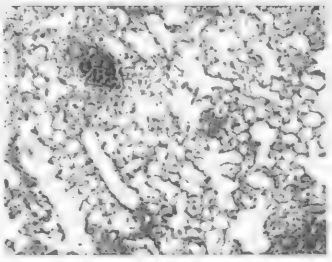
1727 ***Anaplasma phagocytophilum* induces actin phosphorylation to selectively regulate gene transcription in *Ixodes scapularis* ticks**
Hameeda Sultana, Girish Neelakanta, Fred S. Kantor, Stephen E. Malawista, Durland Fish, Ruth R. Montgomery, and Erol Fikrig

1745 **Redundant roles for inflammasome receptors NLRP3 and NLRC4 in host defense against *Salmonella***
Petr Broz, Kim Newton, Mohamed Lamkanfi, Sanjeev Mariathasan, Vishva M. Dixit, and Denise M. Monack

1757 **Myeloid cells, BAFF, and IFN-γ establish an inflammatory loop that exacerbates autoimmunity in Lyn-deficient mice**
Patrizia Scapini, Yongmei Hu, Ching-Liang Chu, Thi-Sau Migone, Anthony L. DeFranco, Marco A. Cassatella, and Clifford A. Lowell



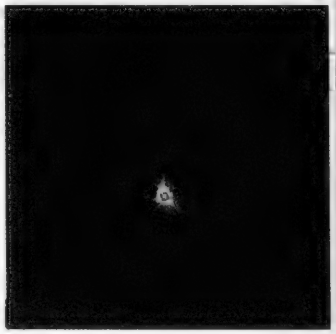
IL-18R-MyD88 signals influence colitis-associated cancer.
See page 1625



IL-17 in post-exposure BCG vaccination.
See page 1609

1775 **$G_{\alpha q}$-containing G proteins regulate B cell selection and survival and are required to prevent B cell–dependent autoimmunity**
Ravi S. Misra, Guixiu Shi, Miguel E. Moreno-Garcia, Anil Thankappan, Michael Tighe, Betty Mousseau, Kim Kusser, Shirly Becker-Herman, Kelly L. Hudkins, Robert Dunn, Marilyn R. Kehry, Thi-Sau Migone, Ann Marshak-Rothstein, Melvin Simon, Troy D. Randall, Charles E. Alpers, Denny Liggitt, David J. Rawlings, and Frances E. Lund

1791 **Tumor masses support naïve T cell infiltration, activation, and differentiation into effectors**
Elizabeth D. Thompson, Hilda L. Enriquez, Yang-Xin Fu, and Victor H. Engelhard



New mouse model of neurodegenerative disease.
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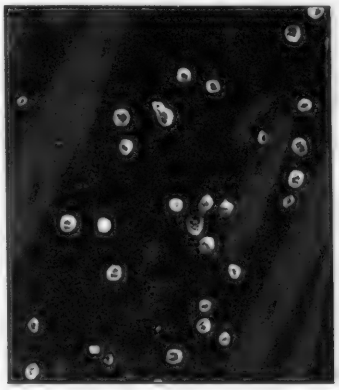


ON THE COVER
Argonaute 2 (Ago2) is involved in the generation of certain miRNAs and in miRNA-mediated gene silencing. Schaefer et al. find that ablation of Ago2 in dopamine 2 receptor–expressing medium spiny neurons alleviates cocaine addiction in mice. The pseudocolored image depicts normal morphology of medium spiny neurons in the brains of mice lacking Ago2 in these cells. Artwork by Joshua Graver (joshuagraver@mac.com).
See page 1843

Perspectives

1807 **Find-me and eat-me signals in apoptotic cell clearance: progress and conundrums**
Kodi S. Ravichandran

Minireviews

1819 **Sliding set-points of immune responses for therapy of autoimmunity**
Chyi-Song Hsieh and Jhoanne Lynne Bautista

Brief Definitive Reports

1825 **Estrogen promotes cutaneous wound healing via estrogen receptor β independent of its antiinflammatory activities**
Laura Campbell, Elaine Emmerson, Faith Davies, Stephen C. Gilliver, Andre Krust, Pierre Chambon, Gillian S. Ashcroft, and Matthew J. Hardman

1835 **Distinct contracted conformations of the *Tcra/Tcrd* locus during *Tcra* and *Tcrd* recombination**
Han-Yu Shih and Michael S. Krangel

1843 **Argonaute 2 in dopamine 2 receptor–expressing neurons regulates cocaine addiction**
Anne Schaefer, Heh-In Im, Morten T. Venø, Christie D. Fowler, Alice Min, Adam Intrator, Jørgen Kjems, Paul J. Kenny, Donal O'Carroll, and Paul Greengard

1853 **PAD4 is essential for antibacterial innate immunity mediated by neutrophil extracellular traps**
Pingxin Li, Ming Li, Michael R. Lindberg, Mary J. Kennett, Na Xiong, and Yanming Wang

1863 **Nontoxigenic protein A vaccine for methicillin-resistant *Staphylococcus aureus* infections in mice**
Hwan Keun Kim, Alice G. Cheng, Hye-Young Kim, Dominique M. Missiakas, and Olaf Schneewind

1871 **IL-2 reverses established type 1 diabetes in NOD mice by a local effect on pancreatic regulatory T cells**
Yenkel Grinberg-Bleyer, Audrey Baeyens, Sylvaine You, Rima Elhage, Gwladys Fourcade, Sylvie Gregoire, Nicolas Cagnard, Wassila Carpentier, Qizhi Tang, Jeffrey Bluestone, Lucienne Chatenoud, David Klatzmann, Benoît L. Salomon, and Eliane Piaggio
See minireview on page 1819

Articles

1879 **Anti-CD3 therapy permits regulatory T cells to surmount T cell receptor–specified peripheral niche constraints**
Junko Nishio, Markus Feuerer, Jamie Wong, Diane Mathis, and Christophe Benoist
See minireview on page 1819

1891 **MHC class II–restricted antigen presentation by plasmacytoid dendritic cells inhibits T cell–mediated autoimmunity**
Magali Irla, Natalia Küpfer, Tobias Suter, Rami Lissilaa, Mahdia Benkhoucha, Jonathan Skupsky, Patrice H. Lalive, Adriano Fontana, Walter Reith, and Stéphanie Hugues

1907 **Central nervous system (CNS)–resident natural killer cells suppress Th17 responses and CNS autoimmune pathology**
Junwei Hao, Ruolan Liu, Wenhua Piao, Qinghua Zhou, Timothy L. Vollmer, Denise I. Campagnolo, Rong Xiang, Antonio La Cava, Luc Van Kaer, and Fu-Dong Shi

1923 **Rap1b facilitates NK cell functions via IQGAP1-mediated signalosomes**
Aradhana Awasthi, Asanga Samarakoon, Haiyan Chu, Rajasekaran Kamalakannan, Lawrence A. Quilliam, Magdalena Chrzanowska-Wodnicka, Gilbert C. White II, and Subramaniam Malarkannan

1939 **DNA methylation prevents CTCF-mediated silencing of the oncogene *BCL6* in B cell lymphomas**
Anne Y. Lai, Mehrnaz Fatemi, Archana Dhasarathy, Christine Malone, Steve E. Sobol, Cissy Geigerman, David L. Jaye, Deepak Mav, Ruchir Shah, Leping Li, and Paul A. Wade

1951 **CXCR3-dependent accumulation and activation of perivascular macrophages is necessary for homeostatic arterial remodeling to hemodynamic stresses**
Jing Zhou, Paul C.Y. Tang, Lingfeng Qin, Peter M. Gayed, Wei Li, Eleni A. Skokos, Themis R. Kyriakides, Jordan S. Pober, and George Tellides

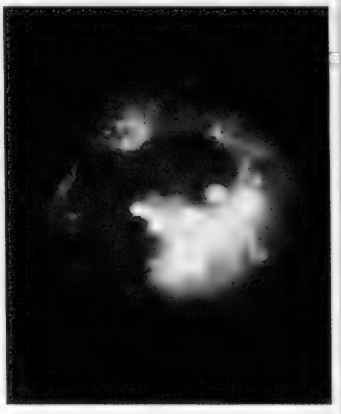
1967 **A novel interaction between FlnA and Syk regulates platelet ITAM-mediated receptor signaling and function**
Hervé Falet, Alice Y. Pollitt, Antonija Jurak Begonja, Sarah E. Weber, Daniel Duerschmied, Denisa D. Wagner, Steve P. Watson, and John H. Hartwig

1981 **Galectin-3 is an important mediator of VEGF- and bFGF-mediated angiogenic response**
Anna I. Markowska, Fu-Tong Liu, and Noorjahan Panjwani

1995 **Human anti–HIV-neutralizing antibodies frequently target a conserved epitope essential for viral fitness**
John Pietzsch, Johannes F. Scheid, Hugo Mouquet, Florian Klein, Michael S. Seaman, Mila Jankovic, Davide Corti, Antonio Lanzavecchia, and Michel C. Nussenzweig

2003 **Soluble HIV-1 Env trimers in adjuvant elicit potent and diverse functional B cell responses in primates**
Christopher Sundling, Mattias N.E. Forsell, Sijy O'Dell, Yu Feng, Bimal Chakrabarti, Srinivas S. Rao, Karin Loré, John R. Mascola, Richard T. Wyatt, Iyadh Douagi, and Gunilla B. Karlsson Hedestam

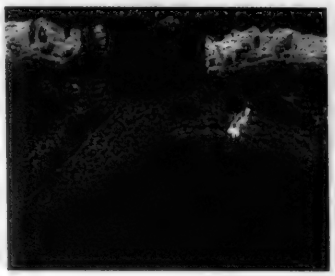
PAD4 in NET-mediated bacterial killing.
See page 1853



Role of CXCR3 in adaptive vascular remodeling.
See page 1951

2019 **Viral entry and escape from antibody-mediated neutralization influence hepatitis C virus reinfection in liver transplantation**
Samira Fafi-Kremer, Isabel Fofana, Eric Soulier, Patric Carolla, Philip Meuleman, Geert Leroux-Roels, Arvind H. Patel, François-Loïc Cosset, Patrick Pessaux, Michel Doffoël, Philippe Wolf, Françoise Stoll-Keller, and Thomas F. Baumert

2033 **The HCMV membrane glycoprotein US10 selectively targets HLA-G for degradation**
Boyoun Park, Eric Spooner, Brandy L. Houser, Jack L. Strominger, and Hidde L. Ploegh



Estrogen receptor β promotes wound healing.
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Minireviews

2045 p53 connects tumorigenesis and reprogramming to pluripotency
Natalia Tapia and Hans R. Schöler

2049 Re-educating natural killer cells
Joseph C. Sun

Reviews

2053 Type I interferon: friend or foe?
Giorgio Trinchieri

Brief Definitive Reports

2065 Mature natural killer cells reset their responsiveness when exposed to an altered MHC environment
Nathalie T. Joncker, Nataliya Shifrin, Frédéric Delebecque, and David H. Raulet
See minireview on page 2049

2073 MHC class I–deficient natural killer cells acquire a licensed phenotype after transfer into an MHC class I–sufficient environment
Julie M. Elliott, Joseph A. Wahle, and Wayne M. Yokoyama
See minireview on page 2049

2081 IL-10 inhibits transcription elongation of the human *TNF* gene in primary macrophages
Tim Smallie, Giuseppe Ricchetti, Nicole J. Horwood, Marc Feldmann, Andrew R. Clark, and Lynn M. Williams

2089 CD11c depletion severely disrupts Th2 induction and development in vivo
Alexander T. Phythian-Adams, Peter C. Cook, Rachel J. Lundie, Lucy H. Jones, Katherine A. Smith, Tom A. Barr, Kristin Hochweller, Stephen M. Anderton, Günter J. Hämmerling, Rick M. Maizels, and Andrew S. MacDonald

Articles

2097 Inflammatory dendritic cells—not basophils—are necessary and sufficient for induction of Th2 immunity to inhaled house dust mite allergen
Hamida Hammad, Maud Plantinga, Kim Deswarte, Philippe Pouliot, Monique A.M. Willart, Mirjam Kool, Femke Muskens, and Bart N. Lambrecht

2113 The Ets-1 transcription factor controls the development and function of natural regulatory T cells
Enguerran Mouly, Karine Chemin, Hai Vu Nguyen, Martine Chopin, Laurent Mesnard, Maria Leite-de-Moraes, Odile Burlen-defranoux, Antonio Bandeira, and Jean-Christophe Bories

2127 Mutant p53 facilitates somatic cell reprogramming and augments the malignant potential of reprogrammed cells
Rachel Sarig, Noa Rivlin, Ran Brosh, Chamutal Bornstein, Iris Kamer, Osnat Ezra, Alina Molchadsky, Naomi Goldfinger, Ori Brenner, and Varda Rotter
See minireview on page 2045

ON THE COVER
Brief Definitive Reports from the teams of Raulet and Yokoyama illustrate the functional plasticity of mature NK cells. Dysfunctional NK cells from MHC class I–deficient mice gain effector function when transferred to MHC-sufficient hosts, and vice versa. Joseph Sun discusses these papers in the context of other recent findings in a Minireview. Watercolor image represents the altered responsive states of NK cells. Artwork by Emilie Clark (emilie@emilieclark.com).
See page 2049

2141 *NKX3.1* is a direct TAL1 target gene that mediates proliferation of TAL1-expressing human T cell acute lymphoblastic leukemia
Sophie Kusy, Bastien Gerby, Nicolas Goardon, Nathalie Gault, Federica Ferri, Delphine Gérard, Florence Armstrong, Paola Ballerini, Jean-Michel Cayuela, André Baruchel, Françoise Pflumio, and Paul-Henri Roméo

2157 Conversion of *Helicobacter pylori* CagA from senescence inducer to oncogenic driver through polarity-dependent regulation of p21
Yasuhiro Saito, Naoko Murata-Kamiya, Toshiya Hirayama, Yusuke Ohba, and Masanori Hatakeyama

2175 Upregulation of Tim-3 and PD-1 expression is associated with tumor antigen–specific CD8$^+$ T cell dysfunction in melanoma patients
Julien Fourcade, Zhaojun Sun, Mourad Benallaoua, Philippe Guillaume, Immanuel F. Luescher, Cindy Sander, John M. Kirkwood, Vijay Kuchroo, and Hassane M. Zarour

2187 Targeting Tim-3 and PD-1 pathways to reverse T cell exhaustion and restore anti-tumor immunity
Kaori Sakuishi, Lionel Apetoh, Jenna M. Sullivan, Bruce R. Blazar, Vijay K. Kuchroo, and Ana C. Anderson

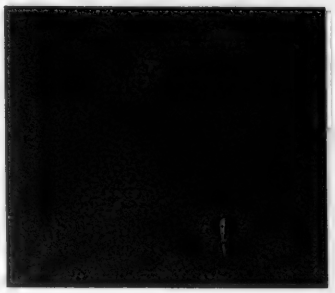
2195 IAP inhibitors enhance co-stimulation to promote tumor immunity
Michael Dougan, Stephanie Dougan, Joanna Slisz, Brant Firestone, Matthew Vanneman, Dobrin Draganov, Girija Goyal, Weibo Li, Donna Neuberg, Richard Blumberg, Nir Hacohen, Dale Porter, Leigh Zawel, and Glenn Dranoff

2207 Lnk-dependent axis of SCF–cKit signal for osteogenesis in bone fracture healing
Tomoyuki Matsumoto, Masaaki Ii, Hiromi Nishimura, Taro Shoji, Yutaka Mifune, Atsuhiko Kawamoto, Ryosuke Kuroda, Tomoaki Fukui, Yohei Kawakami, Tomoya Kuroda, Sang Mo Kwon, Hiroto Iwasaki, Miki Horii, Ayumi Yokoyama, Akira Oyamada, Sang Yang Lee, Shinya Hayashi, Masahiro Kurosaka, Satoshi Takaki, and Takayuki Asahara

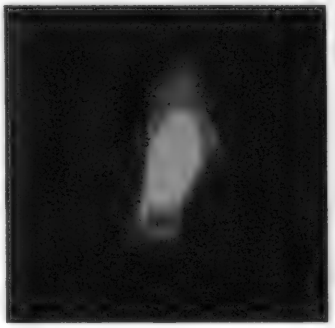
2225 Somatic hypermutation as a generator of antinuclear antibodies in a murine model of systemic autoimmunity
Wenzhong Guo, Diana Smith, Katja Aviszus, Thiago Detanico, Ryan A. Heiser, and Lawrence J. Wysocki

2239 γδ T cells protect against lung fibrosis via IL-22
Philip L. Simonian, Fabian Wehrmann, Christina L. Roark, Willi K. Born, Rebecca L. O'Brien, and Andrew P. Fontenot

2255 Stimulation of lymphangiogenesis via VEGFR-3 inhibits chronic skin inflammation
Reto Huggenberger, Stefan Ullmann, Steven T. Proulx, Bronislaw Pytowski, Kari Alitalo, and Michael Detmar



FcεRI$^+$ DCs initiate Th2 responses to house dust mite allergen.
See page 2049

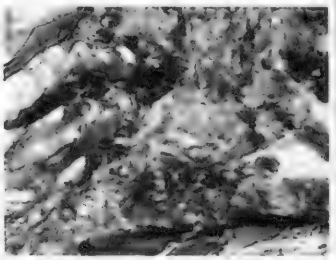


Polarity-dependent oncogenesis of *H. pylori* CagA.
See page 2157

2271 **Engulfment of cerebral apoptotic bodies controls the course of prion disease in a mouse strain–dependent manner**
Jan Kranich, Nike Julia Krautler, Jeppe Falsig, Boris Ballmer, Shulei Li, Gregor Hutter, Petra Schwarz, Rita Moos, Christian Julius, Gino Miele, and Adriano Aguzzi

Corrections

2283 **Soluble HIV-1 Env trimers in adjuvant elicit potent and diverse functional B cell responses in primates**
Christopher Sundling, Mattias N.E. Forsell, Sijy O'Dell, Yu Feng, Bimal Chakrabarti, Srinivas S. Rao, Karin Loré, John R. Mascola, Richard T. Wyatt, Iyadh Douagi, and Gunilla B. Karlsson Hedestam



Fracture healing is accelerated in mice lacking the adaptor protein Lnk.
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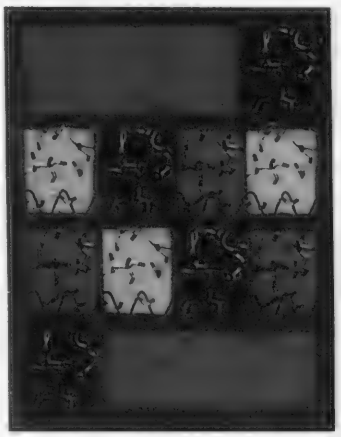


ON THE COVER
Li et al. present the first crystal structures of invariant natural killer T cell receptors (TCRs) bound to microbial glycolipid–CD1d complexes. TCR binding induced conformational changes in the CD1d-bound microbial glycolipids such that they resembled the shape of CD1d-bound α-galactosylceramide. The Warhol-style image features a repeating sequence of these TCR-bound structures. Artwork by Joshua Graver (joshuagraver@mac.com)
See page 2383

Reviews

2287 Epigenetic control of embryonic stem cell fate
Nicolaj Strøyer Christophersen and Kristian Helin

Brief Definitive Reports

2297 The innate immune system in host mice targets cells with allogenic mitochondrial DNA
Kaori Ishikawa, Noriko Toyama-Sorimachi, Kazuto Nakada, Mami Morimoto, Hirotake Imanishi, Mariko Yoshizaki, Shigemi Sasawatari, Mamoru Niikura, Keizo Takenaga, Hiromichi Yonekawa, and Jun-Ichi Hayashi

2307 Whole-exome sequencing-based discovery of STIM1 deficiency in a child with fatal classic Kaposi sarcoma
Minji Byun, Avinash Abhyankar, Virginie Lelarge, Sabine Plancoulaine, Ayse Palanduz, Leyla Telhan, Bertrand Boisson, Capucine Picard, Scott Dewell, Connie Zhao, Emmanuelle Jouanguy, Stefan Feske, Laurent Abel, and Jean-Laurent Casanova

2313 The surface protein HvgA mediates group B streptococcus hypervirulence and meningeal tropism in neonates
Asmaa Tazi, Olivier Disson, Samuel Bellais, Abdelouhab Bouaboud, Nicolas Dmytruk, Shaynoor Dramsi, Michel-Yves Mistou, Huot Khun, Charlotte Mechler, Isabelle Tardieux, Patrick Trieu-Cuot, Marc Lecuit, and Claire Poyart

2323 A critical role for regulatory T cell–mediated control of inflammation in the absence of commensal microbiota
Takatoshi Chinen, Pavel Y. Volchkov, Alexander V. Chervonsky, and Alexander Y. Rudensky

Articles

2331 Helminth secretions induce de novo T cell Foxp3 expression and regulatory function through the TGF-β pathway
John R. Grainger, Katie A. Smith, James P. Hewitson, Henry J. McSorley, Yvonne Harcus, Kara J. Filbey, Constance A.M. Finney, Edward J.D. Greenwood, David P. Knox, Mark S. Wilson, Yasmine Belkaid, Alexander Y. Rudensky, and Rick M. Maizels

2343 Tim3 binding to galectin-9 stimulates antimicrobial immunity
Pushpa Jayaraman, Isabel Sada-Ovalle, Sarah Beladi, Ana C. Anderson, Valerie Dardalhon, Chie Hotta, Vijay K. Kuchroo, and Samuel M. Behar

2355 Pathogenic virus-specific T cells cause disease during treatment with the calcineurin inhibitor FK506: implications for transplantation
Koichi Araki, Shivaprakash Gangappa, Dirck L. Dillehay, Barry T. Rouse, Christian P. Larsen, and Rafi Ahmed

2369 Age-dependent susceptibility to a viral disease due to decreased natural killer cell numbers and trafficking
Min Fang, Felicia Roscoe, and Luis J. Sigal

2383 **The Vα14 invariant natural killer T cell TCR forces microbial glycolipids and CD1d into a conserved binding mode**
Yali Li, Enrico Girardi, Jing Wang, Esther Dawen Yu, Gavin F. Painter, Mitchell Kronenberg, and Dirk M. Zajonc

2395 **A requirement for FcγR in antibody-mediated bacterial toxin neutralization**
Nareen Abboud, Siu-Kei Chow, Carolyn Saylor, Alena Janda, Jeffery V. Ravetch, Matthew D. Scharff, and Arturo Casadevall

2407 **Coordinate suppression of B cell lymphoma by PTEN and SHIP phosphatases**
Ana V. Miletic, Amy N. Anzelon-Mills, David M. Mills, Sidne A. Omori, Irene M. Pedersen, Dong-Mi Shin, Jeffrey V. Ravetch, Silvia Bolland, Herbert C. Morse III, and Robert C. Rickert

2421 **Filamin A regulates focal adhesion disassembly and suppresses breast cancer cell migration and invasion**
Yingjie Xu, Tarek A. Bismar, Jie Su, Bin Xu, Glen Kristiansen, Zsuzsanna Varga, Lianghong Teng, Donald E. Ingber, Akiko Mammoto, Rakesh Kumar, and Moulay A. Alaoui-Jamali

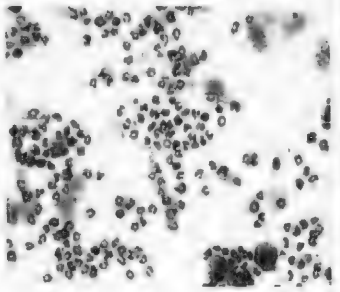
2439 **HIF-1α regulates function and differentiation of myeloid-derived suppressor cells in the tumor microenvironment**
Cesar A. Corzo, Thomas Condamine, Lily Lu, Matthew J. Cotter, Je-In Youn, Pingyan Cheng, Hyun-Il Cho, Esteban Celis, David G. Quiceno, Tapan Padhya, Thomas V. McCaffrey, Judith C. McCaffrey, and Dmitry I. Gabrilovich

2455 **Macrophage-dependent nitric oxide expression regulates tumor cell detachment and metastasis after IL-2/anti-CD40 immunotherapy**
Jonathan M. Weiss, Lisa A. Ridnour, Tim Back, S. Perwez Hussain, Peijun He, Anna E. Maciag, Larry K. Keefer, William J. Murphy, Curtis C. Harris, David A. Wink, and Robert H. Wiltrout

2469 **Bystander killing of cancer requires the cooperation of $CD4^+$ and $CD8^+$ T cells during the effector phase**
Andrea Schietinger, Mary Philip, Rebecca B. Liu, Karin Schreiber, and Hans Schreiber

2479 **A novel subset of $CD4^+$ T_H2 memory/effector cells that produce inflammatory IL-17 cytokine and promote the exacerbation of chronic allergic asthma**
Yui-Hsi Wang, Kui Shin Voo, Bo Liu, Chun-Yu Chen, Burcin Uygungil, William Spoede, Jonathan A. Bernstein, David P. Huston, and Yong-Jun Liu

2493 **STAT6-mediated displacement of polycomb by trithorax complex establishes long-term maintenance of *GATA3* expression in T helper type 2 cells**
Atsushi Onodera, Masakatsu Yamashita, Yusuke Endo, Makoto Kuwahara, Soichi Tofukuji, Hiroyuki Hosokawa, Akinori Kanai, Yutaka Suzuki, and Toshinori Nakayama



Hypoxia maintains MDSCs in tumor environment.
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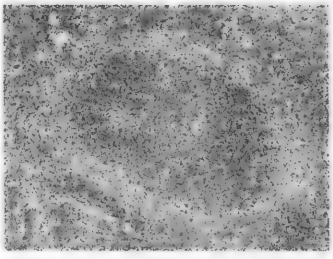

PTEN and SHIP regulate B cell transformation.
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2507 **Cyclin-dependent kinase 5 activity is required for T cell activation and induction of experimental autoimmune encephalomyelitis**
Tej K. Pareek, Eric Lam, Xiaojing Zheng, David Askew, Ashok B. Kulkarni, Mark R. Chance, Alex Y. Huang, Kenneth R. Cooke, and John J. Letterio

2521 ***Tbata* modulates thymic stromal cell proliferation and thymus function**
Francis A. Flomerfelt, Nahed El Kassar, Chandra Gurunathan, Kevin S. Chua, Stacy C. League, Sabrina Schmitz, Timothy R. Gershon, Veena Kapoor, Xiao-Yi Yan, Ronald H. Schwartz, and Ronald E. Gress

Hypervirulence of ST-17 group B streptococcus.
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ON THE COVER
Using a mouse model of acute promyelocytic leukemia (APL), Jones et al. find that the effects of increased Myc copy number drive an unbalanced chromosomal gain that is common in this type of leukemia. Watercolor image depicts bone marrow cells from mice at an early stage of APL. Artwork by Emilie Clark (emilie@emilieclark.com).
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2537 Networking erythropoiesis
Marc A. Kerenyi and Stuart H. Orkin

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2543 A requirement for Lim domain binding protein 1 in erythropoiesis
LiQi Li, Jan Y. Lee, Jennifer Gross, Sang-Hyun Song, Ann Dean, and Paul E. Love

2551 Targeting of B and T lymphocyte associated (BTLA) prevents graft-versus-host disease without global immunosuppression
Jörn C. Albring, Michelle M. Sandau, Aaron S. Rapaport, Brian T. Edelson, Ansuman Satpathy, Mona Mashayekhi, Stephanie K. Lathrop, Chyi-Song Hsieh, Matthias Stelljes, Marco Colonna, Theresa L. Murphy, and Kenneth M. Murphy

2561 Extracellular NAD^+ shapes the $Foxp3^+$ regulatory T cell compartment through the ART2–P2X7 pathway
Sandra Hubert, Björn Rissiek, Katjana Klages, Jochen Huehn, Tim Sparwasser, Friedrich Haag, Friedrich Koch-Nolte, Olivier Boyer, Michel Seman, and Sahil Adriouch

Articles

2569 A BAFF-R mutation associated with non-Hodgkin lymphoma alters TRAF recruitment and reveals new insights into BAFF-R signaling
Joanne M. Hildebrand, Zhenghua Luo, Michelle K. Manske, Tammy Price-Troska, Steven C. Ziesmer, Wai Lin, Bruce S. Hostager, Susan L. Slager, Thomas E. Witzig, Stephen M. Ansell, James R. Cerhan, Gail A. Bishop, and Anne J. Novak

2581 Gain of MYC underlies recurrent trisomy of the MYC chromosome in acute promyelocytic leukemia
Letetia Jones, Guangwei Wei, Sabina Sevcikova, Vernon Phan, Sachi Jain, Angell Shieh, Jasmine C. Y. Wong, Min Li, Joshua Dubansky, Mei Lin Maunakea, Rachel Ochoa, George Zhu, Thelma R. Tennant, Kevin M. Shannon, Scott W. Lowe, Michelle M. Le Beau, and Scott C. Kogan

2595 Epithelial reticulon 4B (Nogo-B) is an endogenous regulator of Th2-driven lung inflammation
Paulette L. Wright, Jun Yu, Y.P. Peter Di, Robert J. Homer, Geoffrey Chupp, Jack A. Elias, Lauren Cohn, and William C. Sessa

2609 Lack of the purinergic receptor $P2X_7$ results in resistance to contact hypersensitivity
Felix C. Weber, Philipp R. Esser, Tobias Müller, Jayanthi Ganesan, Patrizia Pellegatti, Markus M. Simon, Robert Zeiser, Marco Idzko, Thilo Jakob, and Stefan F. Martin

2621 **IκBβ is an essential co-activator for LPS-induced IL-1β transcription in vivo**
Melanie Scheibel, Bettina Klein, Heidrun Merkle, Manon Schulz, Ralph Fritsch, Florian R. Greten, Melek C. Arkan, Günter Schneider, and Roland M. Schmid

2631 **Proliferating cell nuclear antigen acts as a cytoplasmic platform controlling human neutrophil survival**
Véronique Witko-Sarsat, Julie Mocek, Dikra Bouayad, Nicola Tamassia, Jean-Antoine Ribeil, Céline Candalh, Noélie Davezac, Nathalie Reuter, Luc Mouthon, Olivier Hermine, Magali Pederzoli-Ribeil, and Marco A. Cassatella

2647 **Modulation of experimental autoimmune encephalomyelitis through TRAF3-mediated suppression of interleukin 17 receptor signaling**
Shu Zhu, Wen Pan, Peiqing Shi, Hanchao Gao, Fang Zhao, Xinyang Song, Yan Liu, Lihua Zhao, Xiaoxia Li, Yufang Shi, and Youcun Qian

2663 **Cytomegalovirus immunoevasin reveals the physiological role of "missing self" recognition in natural killer cell dependent virus control in vivo**
Marina Babić, Michal Pyzik, Biljana Zafirova, Maja Mitrović, Višnja Butorac, Lewis L. Lanier, Astrid Krmpotić, Silvia M. Vidal, and Stipan Jonjić

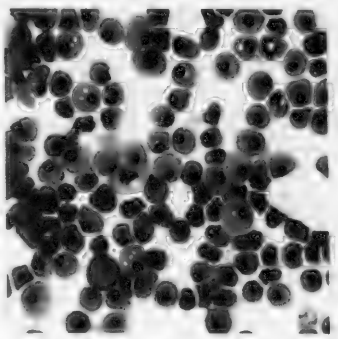
2675 **Identification of a polyI:C-inducible membrane protein that participates in dendritic cell–mediated natural killer cell activation**
Takashi Ebihara, Masahiro Azuma, Hiroyuki Oshiumi, Jun Kasamatsu, Kazuya Iwabuchi, Kenji Matsumoto, Hirohisa Saito, Tadatsugu Taniguchi, Misako Matsumoto, and Tsukasa Seya

2689 **CD14 is a coreceptor of Toll-like receptors 7 and 9**
Christoph L. Baumann, Irene M. Aspalter, Omar Sharif, Andreas Pichlmair, Stephan Blüml, Florian Grebien, Manuela Bruckner, Pawel Pasierbek, Karin Aumayr, Melanie Planyavsky, Keiryn L. Bennett, Jacques Colinge, Sylvia Knapp, and Giulio Superti-Furga

2703 **Mouse CD8α$^+$ DCs and human BDCA3$^+$ DCs are major producers of IFN-λ in response to poly IC**
Henning Lauterbach, Barbara Bathke, Stefanie Gilles, Claudia Traidl-Hoffmann, Christian A. Luber, György Fejer, Marina A. Freudenberg, Gayle M. Davey, David Vremec, Axel Kallies, Li Wu, Ken Shortman, Paul Chaplin, Mark Suter, Meredith O'Keeffe, and Hubertus Hochrein

2719 **Cdc42-mediated MTOC polarization in dendritic cells controls targeted delivery of cytokines at the immune synapse**
Julian Pulecio, Jelena Petrovic, Francesca Prete, Giulia Chiaruttini, Ana-Maria Lennon-Dumenil, Chantal Desdouets, Stephane Gasman, Oscar R. Burrone, and Federica Benvenuti

2733 **Real-time analysis of T cell receptors in naive cells in vitro and in vivo reveals flexibility in synapse and signaling dynamics**
Rachel S. Friedman, Peter Beemiller, Caitlin M. Sorensen, Jordan Jacobelli, and Matthew F. Krummel



Ldb1 is essential for erythropoiesis.
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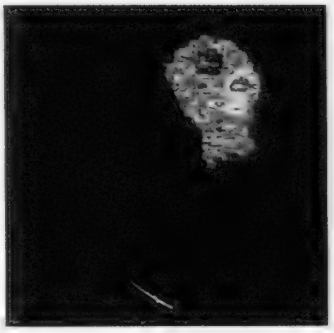

Real-time in vivo T cell receptor dynamics.
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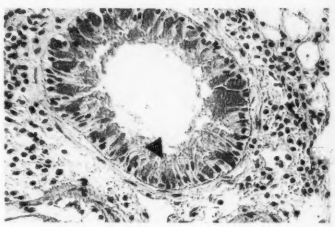
2751 **Regulation of activation-induced deaminase stability and antibody gene diversification by Hsp90**
Alexandre Orthwein, Anne-Marie Patenaude, El Bachir Affar, Alain Lamarre, Jason C. Young, and Javier M. Di Noia

2767 **Development of self-reactive germinal center B cells and plasma cells in autoimmune FcγRIIB-deficient mice**
Thomas Tiller, Juliane Kofer, Cornelia Kreschel, Christian E. Busse, Stefan Riebel, Susanne Wickert, Felix Oden, Maria M.M. Mertes, Marc Ehlers, and Hedda Wardemann



Nogo-B inhibits Th2-mediated lung inflammation.
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Minireviews

2781 **Induced pluripotent stem cell–derived human platelets: one step closer to the clinic**
Christos Gekas and Thomas Graf

Brief Definitive Reports

2785 **Therapy-induced selective loss of leukemia-initiating activity in murine adult T cell leukemia**
Hiba El Hajj, Marwan El-Sabban, Hideki Hasegawa, Ghazi Zaatari, Julien Ablain, Shahrazad T. Saab, Anne Janin, Rami Mahfouz, Rihab Nasr, Youmna Kfoury, Christophe Nicot, Olivier Hermine, William Hall, Hugues de Thé, and Ali Bazarbachi

2793 **Chemorepulsion by blood S1P regulates osteoclast precursor mobilization and bone remodeling in vivo**
Masaru Ishii, Junichi Kikuta, Yutaka Shimazu, Martin Meier-Schellersheim, and Ronald N. Germain

2799 **Interleukin 1 receptor signaling regulates DUBA expression and facilitates Toll-like receptor 9–driven antiinflammatory cytokine production**
Jose M. González-Navajas, Jason Law, Kim Phung Nguyen, Meha Bhargava, Mary Patricia Corr, Nissi Varki, Lars Eckmann, Hal M. Hoffman, Jongdae Lee, and Eyal Raz

2809 **Promoters, enhancers, and transcription target RAG1 binding during V(D)J recombination**
Yanhong Ji, Alicia J. Little, Joydeep K. Banerjee, Bingtao Hao, Eugene M. Oltz, Michael S. Krangel, and David G. Schatz

Articles

2817 **Transient activation of *c-MYC* expression is critical for efficient platelet generation from human induced pluripotent stem cells**
Naoya Takayama, Satoshi Nishimura, Sou Nakamura, Takafumi Shimizu, Ryoko Ohnishi, Hiroshi Endo, Tomoyuki Yamaguchi, Makoto Otsu, Ken Nishimura, Mahito Nakanishi, Akira Sawaguchi, Ryozo Nagai, Kazutoshi Takahashi, Shinya Yamanaka, Hiromitsu Nakauchi, and Koji Eto
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2831 **Erythropoietin protects against diabetes through direct effects on pancreatic β cells**
Diana Choi, Stephanie A. Schroer, Shun Yan Lu, Linyuan Wang, Xiaohong Wu, Yunfeng Liu, Yi Zhang, Herbert Y. Gaisano, Kay-Uwe Wagner, Hong Wu, Ravi Retnakaran, and Minna Woo

2843 **Milk sialyllactose influences colitis in mice through selective intestinal bacterial colonization**
Andrea Fuhrer, Norbert Sprenger, Ekaterina Kurakevich, Lubor Borsig, Christophe Chassard, and Thierry Hennet

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ON THE COVER
In addition to generating functional human platelets from induced pluripotent stem cells, Takayama et al. demonstrate that optimal platelet production requires dynamic changes in c-Myc abundance during differentiation. Artwork by Rachel Urkowitz (rachelurk@earthlink.net).
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2855 **VEGF receptor signaling links inflammation and tumorigenesis in colitis-associated cancer**
Maximilian J. Waldner, Stefan Wirtz, André Jefremow, Moritz Warntjen, Clemens Neufert, Raja Atreya, Christoph Becker, Benno Weigmann, Michael Vieth, Stefan Rose-John, and Markus F. Neurath

2869 **Preferential infection and depletion of *Mycobacterium tuberculosis*–specific CD4 T cells after HIV-1 infection**
Christof Geldmacher, Njabulo Ngwenyama, Alexandra Schuetz, Constantinos Petrovas, Klaus Reither, Edwin J. Heeregrave, Joseph P. Casazza, David R. Ambrozak, Mark Louder, William Ampofo, Georgios Pollakis, Brenna Hill, Erica Sanga, Elmar Saathoff, Leonard Maboko, Mario Roederer, William A. Paxton, Michael Hoelscher, and Richard A. Koup

2883 **A peripheral $CD4^+$ T cell precursor for naive, memory, and regulatory T cells**
Chunfang Zhao and Joanna D. Davies

2895 **IL-27 supports germinal center function by enhancing IL-21 production and the function of T follicular helper cells**
Marcel Batten, Nandhini Ramamoorthi, Noelyn M. Kljavin, Cindy S. Ma, Jennifer H. Cox, Hart S. Dengler, Dimitry M. Danilenko, Patrick Caplazi, Melanie Wong, David A. Fulcher, Matthew C. Cook, Cecile King, Stuart G. Tangye, Frederic J. de Sauvage, and Nico Ghilardi

2907 **Conserved natural IgM antibodies mediate innate and adaptive immunity against the opportunistic fungus *Pneumocystis murina***
Rekha R. Rapaka, David M. Ricks, John F. Alcorn, Kong Chen, Shabaana A. Khader, Mingquan Zheng, Scott Plevy, Eva Bengtén, and Jay K. Kolls

2921 **Plasmacytoid dendritic cells sense skin injury and promote wound healing through type I interferons**
Josh Gregorio, Stephan Meller, Curdin Conrad, Anna Di Nardo, Bernhard Homey, Antti Lauerma, Naoko Arai, Richard L. Gallo, John DiGiovanni, and Michel Gilliet

2931 **Autoimmune skin inflammation is dependent on plasmacytoid dendritic cell activation by nucleic acids via TLR7 and TLR9**
Cristiana Guiducci, Claudio Tripodo, Mei Gong, Sabina Sangaletti, Mario P. Colombo, Robert L. Coffman, and Franck J. Barrat

2943 **Plexin-A4–semaphorin 3A signaling is required for Toll-like receptor– and sepsis-induced cytokine storm**
Haitao Wen, Yu Lei, So-Young Eun, and Jenny P.-Y. Ting

2959 **MCP-induced protein 1 deubiquitinates TRAF proteins and negatively regulates JNK and NF-κB signaling**
Jian Liang, Yasser Saad, Tianhua Lei, Jing Wang, Dongfei Qi, Qinglin Yang, Pappachan E. Kolattukudy, and Mingui Fu

2975 **Differential regulation of human and murine P-selectin expression and function in vivo**
Zhenghui Liu, Jonathan J. Miner, Tadayuki Yago, Longbiao Yao, Florea Lupu, Lijun Xia, and Rodger P. McEver

VEGFR links inflammation and tumorigenesis.
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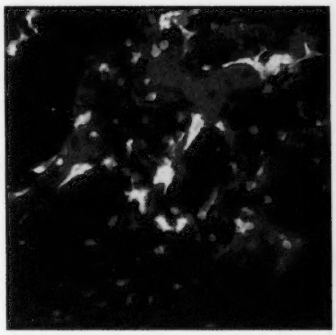

S1P chemorepulsion of osteoclasts in vivo.
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